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NEW SYSTEMS OF VOCATIONAL TRAINING AND APPRENTICESHIP

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NEW SYSTEMS OF VOCATIONAL TRAINING AND APPRENTICESHIP

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I. PRIORITIES OF DEVELOPMENT

1. A developing country may be defined as a country whose economy is based primarily on the export of raw materials and whose natural resources are capable of being developed into industries producing commodities or capital goods which would find a place in international economic exchanges.

2. The man-power resources of a developing country may be vast but they have not acquired the skills which enable their earning power to permit a reasonable access to the amenities of a good standard of living.

3. A RAPIDLY developing country is distinguished by an accelerated development of natural resources ahead of the development of its man-power resources and may ultimately suffer a sense of frustration because of the shortage of technicians and skilled workers.

4. The attraction of "rapid development", the pressing political and social needs of an improved standard of living, the absence of planning parallel development of man-power and natural resources can lead a developing country to make a fatal mistake. The mistake of yielding to the attractive propositions of building factories to create jobs, of embarking on large scale projects of land reclamation and processing of natural resources without due consideration to the prerequisite of skilled man-power. The often limited capital available for investment is sponged quickly in the purchase of modern equipment which cannot be utilized with maximum efficiency. Production costs will be high and competition in International markets difficult.

5. The biggest natural resource of almost all developing countries lies not in the hidden treasures of oil, water power, minerals, good soil or any other form of potential, for all such potentials remain useless unless mixed with the super-ingredient of human skill. The greatest resource of most of the developing countries is their man-power resource and it should receive first priority in development. In the United Arab Republic, the labour force is almost 6½ million and if, through training, the income is raised from the present

guaranteed minimum of L.E. 0.250 daily to L.E. 0.500 which is earned at present by a semi-skilled worker, the increase in national income will amount to L.E. 1,625,000. - daily, or L.E. 487.5 million yearly which is half of the national budget.

II. A POLICY AND A TARGET

6. In drawing up a policy for training the man-power resources of a developing country, it must be realized that skills are inherently linked to TRADES, and since in our age of Technology trades subdivide and multiply and transform in the working life of a man, certain skills will become irrelevant and possibly unwanted. The training scheme should allow for a man to enter a new trade. This will not be only a future safeguard for the labour force of a nation but also a safeguard against a rush on certain trades which may appear at the time as paying the highest wages. To cite one example from the experience of the United Arab Republic; the building trade was flourishing at the time when training centers and schools were being established some seven years ago. All personnel engaged in the building trades enjoyed high wages and were in great demand. There was corresponding influx of people requesting and obtaining training as skilled masons, reinforced concrete casters, plumbers, carpenters ... etc. Three years ago, the national planning board saw fit to restrict the investment in buildings and naturally the demand for the skills involved in the building trade became less and that was followed by lower wages which may still become lower if it were not possible for some of those trained in the various building trades to re-enter a training center or a school.

7. A valuable experience of the UAR has been the confirmation of a policy that almost everything from atomic energy to practical skills are better taught in institutions whose sole purpose is teaching, and which are equipped accordingly, provided that qualified teachers are available and the theoretical and practical instruction is tailored specifically for the given objective.

8. A developing country should have as a main policy the creation of a national vocational training system, which, in the absence of a huge industry that can undertake the training of apprentices, may throw the burden on the vocational Education department. The creation of a special ministry of vocational Education for co-ordinating the work between the Ministries of Planning, Industry, Labour, Social Affairs and Education does not seem to be an undesirable overload of the administration.

9. The expansion of a Vocational Education system must be preceded by making available sufficient instructors and teachers. One of the earliest efforts in this direction in the UAR was the establishment of the only Institute of its kind in the Middle East for training instructors and teachers for the Technical Education Department. That was in 1955 and now for more than 3 years a steady stream of 100 fully qualified men a year who have gone through a 5 year course after their full secondary general education, enrich the staff of the Industrial schools and Training centers.

10. The target of the National Vocational Training should be to match the requirement of the nation. Allowing for a working life span of 40 years, the yearly replacement per one million of the labour force is 25000; again allowing for the increase in population and the fact that the training takes 4 to 5 years, it is easy to see that per one million of the labour force the number of young people under training at any given time should be in the neighbourhood of 125000 to 150000. For a country like the UAR with 6½ million labour force, our vocational education system should be able to cope with one million young people. The realisation of such a target explains the difficulties of a developing nation..

III. THE IMPLICATIONS

11. The early drive by the Vocational Education Department of the Ministry of Education, the vocation and apprenticeship department of the Ministry of Industry and the coordinated efforts of the Ministry of Labour and Social Affairs was to reach a decision that a given percentage of the capital to be invested in the five year industrial plans should be set aside for training the human resources.

12. The Ambitions figure of 10 percent was considered too high by the Planning Committee but the argument put forward, that to devote 10 percent of the capital to be invested for the purposes of training would ultimately double the output, was never refuted.

13. A developing country cannot exert all its energy in one direction of development. That is to say a country cannot concentrate for example on the field of education only or on economic development alone but rather the effort must be spread and a certain bias given to the field of priority.

14. The implications in the case of the United Arab Republic were first of all the allocation of the necessary funds and the insistence that without the development of the skills of the enormous labour force, the set back that would be suffered in later years of development would have a detrimental effect on the nation both physically and morally.

15. The training plan implied also that the agricultural workers must be included otherwise the bulk of the labour force would be left outside the scheme. It was also realised that training agricultural workers on new systems and methods was in some cases more difficult than training potential industrial workers.

16. But above all the most serious implication was that the mental attitude towards manual work of the bulk of a population which has grown to consider a white collar job as the ultimate in achievements, must undergo a radical change.

IV. THE METHODS ADOPTED

17. The inducement of craftsmanship, even agricultural craftsmanship, can be attained more in a school or college than in the industrial plant or the fields. It was decdided that a fair standard of general education forms an excellent background for any vocation and the accent was on the young people who had completed 9 years of general education. This was set as a first step towards a later requirement of 12 years of general education.

18. In a developing country where the young people are not likely to come in close contact with modern industrial equipment and modern farm machinery, close attention must be given to the practical training without losing sight of sufficient instruction in the theoretical side and also of adding to the general education of the student. In the UAR we had to think also of the efficiency of utilisation of expensive equipment. We could not equip schools with L.E. 100000 - worth of equipment and use it a few hours in a few days a week.

19. Thus one of the methods adopted was to establish Industrial schools for boys and girls who had completed 9 years of general education. The curricula of such schools was designed to allow 50% of the time in workshops, 25% for theoretical understanding and Technology and 25% for general education. The 50 percent practical instruction although considered a minimum allowed the full utilisation of the shops throughout the whole day. In recent years the schools were opened for two shifts of the students from 8 A.M. to 9 P.M.

20. In the vocational agricultural schools similar methods were adopted and each school annexed a farm of not less than 80 acres (about 20 Hectares) where the students carried intensive training and use of modern equipment.

21. For the sake of comparison it may be useful to mention that the cost of a school fully equipped for a three year course of 1000 students was approximately £ 200000.

22. It was fortunate that the UAR planned and carried out with vigour this long range program. The number of vocational schools rose from 23 in 1952 to 180 in 1962 and the number of students from 18000 to 100000 and the sums invested and allocated for investment until the end of the five year plan in 1956 was established and approved at £ 24 million. The cost of training per student is between £ 60 and £ 65 against £ 20 for secondary general education.

23. The growth of the schools was necessarily slow and the growing industry was impatient. Thus the Ministry of Industry carried out a parallel program of accelerated training as well as a long range program of normal industrial apprenticeship. The investment was some £ 11.5 million.

24. It is true that the combined investment of £35.5 million was short of the desirable percentage of the total invested capital in the industrial growth. But it was realised that not all the difficulties came from the shortage of funds.

25. Vocational education and training covers all sectors of the economy, such as agriculture including animal husbandry and land reclamation; small scale and cottage industries; large scale industries such as iron and steel or metal industries; and home economics.

26. It is for all types of workers, including specialists, semi-skilled, skilled, supervisory, technical, commercial and managerial.

27. The Vocational schools and institutes serve different sectors of the economy, and also serve the different individual requirements by providing workshop experience and theoretical instruction as in-service training, up grading courses. These services are rendered by organising full-time day courses and part-time evening classes.

28. Pre-vocational activities are used to a small extent in post-primary (6 years) and post-preparatory (9 years) education. The courses have a little bias of not more than 15 percent towards practical activities.

29. The Pre-vocational activity has not received full attention in the UAR but should be seriously considered by developing countries. In industrialised countries such activity may not be neccessary, for the very reasons why it is desirable in developing countries. In rural areas it fits the pupils to give their parents profitable help during their vacations (in many developing countries, children became contributory members of the family at an early age). The elementary skills also serve as an introduction into fundamental skills necessary for future work in Industry.

30. Although the young industry in a developing country cannot undertake a major share in training for future and existing needs, its potential however small must not be neglected. The Ministry of Industry in the UAR encouraged employers who do not provide training to incorporate into their shops a systematic and organised form of training. For small employers of the same basic trade, group training centers were created under the supervision of the Ministry. It was realised also that a proper and systematic form of apprenticeship is necessary and a formal law to regulate an indentured apprenticeship system was passed.

31. But as the shortage of skilled workers is becoming more acute and more painful to the expanding industry, the duration of apprentice training has not been made sufficiently long to produce the true skilled worker. The planning committee in a developing country should realise that to produce a skilled technician in many of the present technological trades takes a minimum of FIVE years of intensive training, partly on the job and partly in the class room.

32. The introduction of an accelerated training system should be done cautiously in a developing country. Accelerated training was practiced on a large scale during World War II by the INDUSTRIAL NATIONS , and its purpose was entirely different from the purpose of its application now. In the UAR this is being

done on a limited scale but the tendency of the Ministry of Industry is to increase the activity in that direction.

V. THE DIFFICULTIES

33. To channel a greater number of students who have completed 9 years of general education to the industrial schools was the first hurdle in the course of the Ministry of Education. Almost all parents wanted their children to follow an education leading to a University degree, any degree, irrespective of abilities and aptitudes. Prior to 1954 Vocational education was a terminating stage and parents and off-springs alike shied from the blind alley.

34. The device employed for channelling the urgently needed young craftsmen and technicians was simple. The University doors were opened through an entrance examination to the students completing their courses successfully in vocational schools. The new industrial schools hum with great activity and are unable to accommodate all applications. The advantages of vocational education were obvious; for whereas a boy leaving secondary general education has no alternative but to go to a higher education institute or university, the boy leaving secondary vocational education can, according to his wish either accept any one of a number of jobs or proceed to higher education or perhaps indulge in both activities.

35. The second difficulty was the instructor. The shortage was acute and even those available were being attracted by higher wages in industry. Despite the creation of a special institute, there was the time factor. It takes 5 years to train an instructor and then it was not certain that he would stay.

36. A third difficulty was the almost complete absence of technical books in Arabic. True a foreign language was part of the curricula of the schools but it was imperative to teach the technical subjects and give workshop and field instructors in Arabic.

37. A fourth difficulty was that a master plan for economic and industrial development was not available early in 1954. An extensive training scheme of a developing nation must be flexibly but firmly coupled to its economic development. It was easy to say that 10000 men are needed in the metal industries, but in what specializations? It is depressing for a young man to find, after intensive and hopeful training that he has been trained in a profession which had no prospect of employment.

38. The greatest difficulty, however, was in creating a whole new class of TECHNICIANS and SUPERVISORS OR FOREMEN who did not exist at all.

39. The absence of this link in the chain of industrial production caused and is still causing great waste in the employment of Engineers and Science graduates.

40. Supervisors and foremen are selected from skilled workers for further training in foremanship. Although training courses

are short (6 months), the maturity in his human relations of the foreman is not achieved in such a short time.

41. An Institute for training supervisors and foremen was established in Cairo but still the accent of the training was on modern production methods and equipment. In addition to his technical ability, however, a supervisor should be able to understand the problems encountered by the workers in the performance of their jobs. Developing nations must learn to be patient in evolving this class.

42. The technicians problem was tackled in the UAR by establishing a Polytechnic (it will go in operation in October 1963) which will handle some 4000 students in 50 trades and will have an instructor body of 500. The cost of the Polytechnic is approximately £ 1.5 million.

43. A further difficulty which will meet all developing countries in due course is the output from its general education system whether that be at the end of the school leaving age or at the pre-university level. As the educational system in any country including the industrial nations cannot be designed to lead all children to a university degree or even a diploma from a post-secondary school, the standing wave at the doors of Universities and Higher Institutes will increase in intensity and some form of by-pass into the labour market must be made available for the young men and women at the end of their secondary education.

44. If vocational instruction has been included in their curricula, the problem may not be acute. In most developing countries the odds are that no vocational instruction is given and possibly no vocational guidance is available. At least this was the case in the UAR up to 1955 when a training center was opened for the young people who, having completed 12 years of general education, could not for some reason or other proceed to higher education.

45. The training center provided concentrated courses of 42 hour weeks for ten months in such trades as Electric Welding, Air conditioning and refrigerator service, storekeepers, laboratory attendant, chemical plant operators, motor mechanics, secretarial work ... etc. The overwhelming popularity of those centers made their population grow from 250 students in 1955 to 5000 in 1962.

VI. A I D

46. It is heart warming on an international scale to find that in recent years, many of the more materially developed countries have tried to add their assistance to the local effort.

47. The Specialized Agencies of the United Nations have played an importnat role in making this aid effective through a coordinating and an administrative machine which has no parallel in any single nation.

48. The Specialized Agencies have realized that the pace of development is not yet sufficient to meet the new hopes of

developing nations and their anxiety lest such disappointment might became a real moral breakdown , is obvious in their greatly intensified activities.

49. The Specialized Agencies of the United Nations have come to the aid of the UAR in the field of technical education and Industrial training in supplying much needed experts for the designing of the curricula, for running model schools, for advice on type of equipment and the recommendation of scholarships, both in the Industrial and Agricultural fields.

50. The problem of text books for technical education was also handled by UNESCO through the arrangement of copy-rights and the creation of translation center in Cairo.

51. The UAR has benefited also from some bilateral agreements of training the instructors on a truly substantial scale. Many scholarships have been offered and finally a scheme of "Training through employment" has been put in operation with the objective of training 2000 men a year for a period of 3 to 4 years.

VII. EVALUATION

52. The program of vocational training and apprenticeship upon which the UAR has embarked and is trying to complete is only 8 years old. Its evaluation at this stage with the purpose of criticism may be a little at close quarters but it is excellent procedure to examine from time to time what stages of the objectives have been reached and whether a change in the methods would lead to greater efficiency.

53. In the eight years we have discovered that the time factor is the greatest handicap. It takes years to form a technician or craftsman and even more years for him to mature. It is true we have the privilege of benefiting from the experience of the more developed nations, but it is not always possible to copy. In fact one must not copy but rather try to understand what makes a given system successful in a given country.

54. Co-ordinated international aid through the Agencies of the United Nations may try the patience of developing nations, but having started, the inertia of the immense machine brings forth quicker results.

55. In the UAR, the interim evaluation reports show that, the faster development requires even greater numbers than previously anticipated. They show also that a base of general education as wide as possible should be aimed at for future craftsmen and technicians, that the population is becoming work conscious and the appeal of technical education is spreading at all levels. It is considered that in a few years, it will be time for industry to step in and undertake the greater part of the training. The training of agricultural workers will have to stay perhaps for a while longer in farms attached to Agricultural Schools Agricultural Institute and Universities.

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